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McGuire Woods LLP
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EXAMINER

LIANG, REGINA

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 10/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/901,137

Applicant(s)

LEE ET AL.

Examiner

Regina Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Double Patenting

2. Claims 8 and 9 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 5 and 6, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claim 28 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/154,919. Although the conflicting claims are not identical, they are not patentably distinct from each other because both are directing to a LCD display receiving RGB gray scale signals from the outside and establishing RGB gammas curve based on the RGB gray scale data, and generating data voltage based on the gammas curve.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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6. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification discloses a control unit at initial driving, the color correction unit generating corrected picture data corresponding to receiving of raw RGB picture data while storing the corrected picture data, and after the initial driving, upon receipt of raw RGB picture data from outside, extracting corrected picture data from the memory and transforming the extracted picture data into multi-gray scales and output to the data driver. The specification does not disclose "stores values over corrected RGB gamma curves corresponding to the corrected picture data, and gamma-corrects the raw RGB picture data based on values over the stored corrected RGB gamma curves" as claimed in claims 1 and 7.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-10, 16-18, 23, 24, 26, 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1 and 7, it is unclear and confusing as to "stores values over corrected RGB gamma curves corresponding to the corrected picture data, and gamma-corrects the raw RGB picture data based on values over the stored corrected RGB gamma curves" since it is not understand what values are to be stored.

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As to claims 5, 6, 8, 9, 16, 23, 24, 26, 27, the terms "VA"(claims 5, 8, 23, 26), "PVA" (claims 6, 9, 24, 27), "FRC" (claim 16) have not been defined.

Claim Rejections - 35 USC § 102

9. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Moon (US. Pub. No. 2002/0180680).

As to claim 28, Fig. 2 of Moon discloses a LCD device having gate lines and data lines, and comprising sequentially transmitting scanning signal to the gate lines, upon receipt of RGB gray scale data for displaying picture images from the outside, establishing RGB gammas based on the RGB gray scale data, and generating data voltages based on the established RGB gammas, and outputting the data voltage generated to the data lines (e.g., see page 6, section [0110]).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al (US. PAT. NO. 5,359,342 hereinafter Nakai) in view of Ryan (US. PAT. NO. 6,075,514)..

As to claim 1, Nakai discloses a LCD display comprising a LCD panel, a control unit having a color correction unit generating corrected RGB picture data based on values over a

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predetermined imaginative gamma curve established in accordance with the characteristic of the LCD panel. Nakai does not disclose the control unit storing the generated corrected picture data at initial driving, after the initial driving, extracting corrected picture data corresponding to the raw RGB picture data from the memory and transmitting the extracted picture to the data driver. However, Fig. 5 of Ryan teaches a system comprising at initial step, obtaining corrected picture data using look-up table, storing the corrected picture data into the memory, after the initial step, extracting corrected picture data from the memory corresponding to the new input color values and outputting the extracted corrected picture data (col. 5, line 48 to col. 6, line 64 for example). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the control unit of Nakai to have the feature as taught by Ryan so as to provide a faster color correction technique in which re-using output corrected color values, and thereby avoids re-determination of corrected values in many cases.

As to claim 2, Nakai teaches the number of bits in the corrected picture data is altered through making bit extension with respect the new picture data (col. 9, lines 60-61).

As to claims 3, 4, Nakai teaches the imaginative gamma curves is the G gamma curve adapted to the G picture data (e.g., see Figs. 8 and 9 of Nakai).

12. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

As to claims 5-9, Nakai does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known in the art that the LCD

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panel makes the display in a VA mode or a PVA mode. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

As to claim 10, Nakai teaches the corrected gamma curves having gray scale extension.

13. Claims 11-15, 19-21, 25, 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of Takahara et al (US. PAT. NO. 5,196,738 hereinafter Takahara).

As to claims 11, 25, 28, Nakai as modified by Ryan does not disclose the LCD display comprising a plurality of gate lines and a plurality of data lines, switching circuits connected to the gate and the data lines, a scan driver and a data driver. However, Fig. 3 of Takahara teaches a LCD display device comprising a plurality of gate lines and a plurality of data lines, switching circuits (TFT) connected to the gate and the data lines, a scan driver and a data driver. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD display of Nakai as modified by Ryan to have TFT-LCD as taught by Takahara so as to provide a LCD display having a light weight and an excellent image quality.

As to claims 12, 19, 29-32, Nakai teaches normalizing the RGB gamma curves and controlling the gray scale levels of the picture signal as claimed (e.g., Figs. 7 and 8 and col. 5, lines 44-57 of Nakai).

As to claims 13, 14, Nakai as modified by Ryan teaches a color correction unit as claimed (see the rejection of claim 1 above). Fig. 1 of Nakai also teaches the control unit comprising a

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timing control unit (12, 13) outputting the transformed picture data to the data driver and generating timing signal for controlling the operation of the scan driver and the data driver.

As to claim 15, Ryan teaches the color correction unit further makes a treatment of dithering (col. 5, lines 34-35).

As to claim 20, 21, Nakai teaches the number of bits in the corrected picture data can be the same as the bit number of the inputted picture data or can be altered through making bit extension with respect the new picture data (col. 9, lines 60-61).

14. Claims 16, 17, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claim 11 above, and further in view of Saxena et al (US. PAT. NO. 5,777,590 hereinafter Saxena).

As to claims 16, 22, Nakai as modified by Ryan and Takahara does not disclose the multi-gray scale transformation is made through frame rate control FRC. However, Saxena teaches a device using frame rate control modulation for intensity shading for each pixel for providing gray scale shading for a LCD display device. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakai as modified by Ryan and Takahara to use a frame rate control FRC in the multi-gray scale transformation as taught by Saxena so as to support various level intensity shadings using a frame rate control scheme and ensure that the pixel drivers in the display have balanced loading.

As to claim 17, Nakai as modified by Ryan teaches the color correction unit comprises a memory control unit.

15. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan, Takahara, Saxena as applied to claim 17 above, and further in view of Huang et al (PUB. NO. 2001/0045946 hereinafter Huang).

Nakai as modified by Ryan, Takahara and Saxena does not disclose the memory control unit comprising a non-volatile memory for storing picture data. However, it is well known in the art that a memory control unit comprising a non-volatile memory (col. 5, section [0062] of Huang). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the memory control unit of Nakai as modified by Ryan, Takahara and Saxena have a non-volatile memory since Huang teaches this type of memory complements the low power characteristic of the Ch-LCD.

16. Claims 23, 24, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claims 11 and 25 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

Nakai as modified by Ryan and Takahara does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known in the art that the LCD panel makes the display in a VA mode or a PVA mode. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan and Takahara to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

Conclusion

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17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishii et al (US. PAT. NO. 4,779,083) and Ishii (US. PAT. NO. 4,827,255) teach display control system.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (703) 305-4719. The examiner can normally be reached on Monday-Friday from 9AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


REGINA LIANG
PRIMARY EXAMINER
ART UNIT 2674

RL
9/25/03